

## Lightsource Test Report

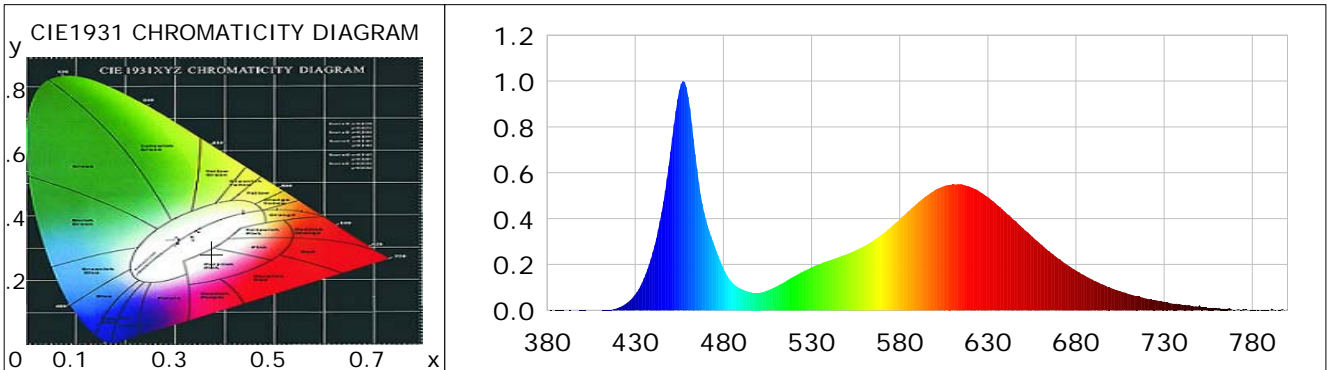
### Product Infomation

Product Category: LED-Röhre  
 Product Spec: LEDtube-090-8Meat-TR-15WM  
 Manufacturer: METOLIGHT  
 Buyer: 7116

Product Type: LED-Röhre-Spezial  
 Product Number: 1  
 Submitted Unit: 101789

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3739$   $y=0.2813$   $u(u')=0.2657$   $v=0.2999$   $v'=0.4499$   
 CCT:  $T_c=3123K$  ( $duv=-0.04990$ ) Color Ratio:  $R=0.279$   $G=0.667$   $B=0.054$   
 Peak Wavelength: 457.2nm Half Bandwidth: 20.6nm  
 Dominant Wavelength: 0.0nm Color Purity: 0.000  
 CRI:  $R_a = 76.3$ ,  $avgR(1\sim14) = 73.4$ ,  $avgR(1\sim15) = 74.3$  TM30:  $R_f = 78$ ,  $R_g = 105$   
 GAI:  $GAI\_BB\_8 = 187.1$ ,  $GAI\_BB\_15 = 176.4$ ,  $GAI\_EES = 113.6$   
 R1 = 91 R2 = 78 R3 = 73 R4 = 78 R5 = 89 R6 = 64 R7 = 65 R8 = 73  
 R9 = 74 R10 = 62 R11 = 74 R12 = 34 R13 = 85 R14 = 89 R15 = 88  
 Color Quality Scale:  $Q_a = 72.3$ ,  $Q_f = 65.1$ ,  $Q_p = 89.0$ ,  $Q_g = 109.6$   
 Q1 = 90 Q2 = 93 Q3 = 60 Q4 = 55 Q5 = 70 Q6 = 82 Q7 = 79 Q8 = 83  
 Q9 = 92 Q10 = 76 Q11 = 65 Q12 = 60 Q13 = 61 Q14 = 78 Q15 = 85



### Photometric Parameters

Luminous Flux: 1283.5 lm Efficiency: 85.79 lm/W Radiant Power: 5.119 W  
 Total mains efficacy: 100.89 lm/W Energy Efficiency Class: F (EU 2019/2015)  
 Pupil Flux: 2042.98 Plm Pupil Lumens Per Watt: 136.56 Plm/W Pupil Factor (Kp): 1.592  
 Cirtopic Flux: 4777.44 lm

### Electric Parameters

Voltage: 230.80V Current: 0.0690A Power: 14.96W  
 Power Factor: 0.9360 Frequency: 49.99Hz

### Test Infomation

Scan Range: 380~800:1nm Photometric Method: sphere-spectroradiometer  
 Stabilization Time: 0 ms ALC.: 1.0000 Photometric Condition: Sphere diameter: 2.00m, 4PI  
 Max of Signal: 46359 (2535) CCD Integration Time: 124.80 ms

Condition:  $T_x: 21.8^\circ C$ ,  $T_i: 0.0^\circ C$ , R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 14:21:15  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.0347	525	0.1686	9.4754	670	0.2257	12.6834
385	0.0011	0.0623	530	0.1875	10.5406	675	0.1985	11.1540
390	0.0003	0.0167	535	0.2031	11.4130	680	0.1732	9.7331
395	0.0002	0.0113	540	0.2174	12.2178	685	0.1515	8.5140
400	0.0008	0.0434	545	0.2309	12.9760	690	0.1300	7.3073
405	0.0003	0.0180	550	0.2448	13.7605	695	0.1133	6.3695
410	0.0006	0.0358	555	0.2615	14.6975	700	0.0965	5.4231
415	0.0026	0.1471	560	0.2804	15.7588	705	0.0842	4.7345
420	0.0100	0.5647	565	0.3043	17.1029	710	0.0706	3.9676
425	0.0305	1.7149	570	0.3319	18.6515	715	0.0617	3.4668
430	0.0692	3.8907	575	0.3629	20.3970	720	0.0516	2.8992
435	0.1399	7.8621	580	0.3970	22.3128	725	0.0451	2.5370
440	0.2545	14.3037	585	0.4330	24.3335	730	0.0380	2.1355
445	0.4302	24.1780	590	0.4669	26.2429	735	0.0286	1.6089
450	0.6919	38.8839	595	0.4983	28.0051	740	0.0246	1.3849
455	0.9603	53.9704	600	0.5244	29.4711	745	0.0201	1.1289
460	0.9316	52.3584	605	0.5413	30.4241	750	0.0221	1.2447
465	0.6181	34.7359	610	0.5502	30.9251	755	0.0112	0.6276
470	0.3982	22.3822	615	0.5510	30.9693	760	0.0085	0.4801
475	0.2803	15.7533	620	0.5386	30.2677	765	0.0063	0.3541
480	0.1831	10.2914	625	0.5190	29.1688	770	0.0016	0.0887
485	0.1218	6.8433	630	0.4935	27.7384	775	0.0056	0.3174
490	0.0938	5.2700	635	0.4614	25.9297	780	0.0023	0.1312
495	0.0798	4.4849	640	0.4274	24.0195	785	0.0032	0.1778
500	0.0766	4.3044	645	0.3934	22.1088	790	0.0003	0.0168
505	0.0867	4.8703	650	0.3575	20.0932	795	0.0019	0.1051
510	0.1037	5.8304	655	0.3228	18.1405	800	0.0043	0.2406
515	0.1248	7.0112	660	0.2887	16.2262			
520	0.1473	8.2787	665	0.2570	14.4420			

Condition: Tx:21.8'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

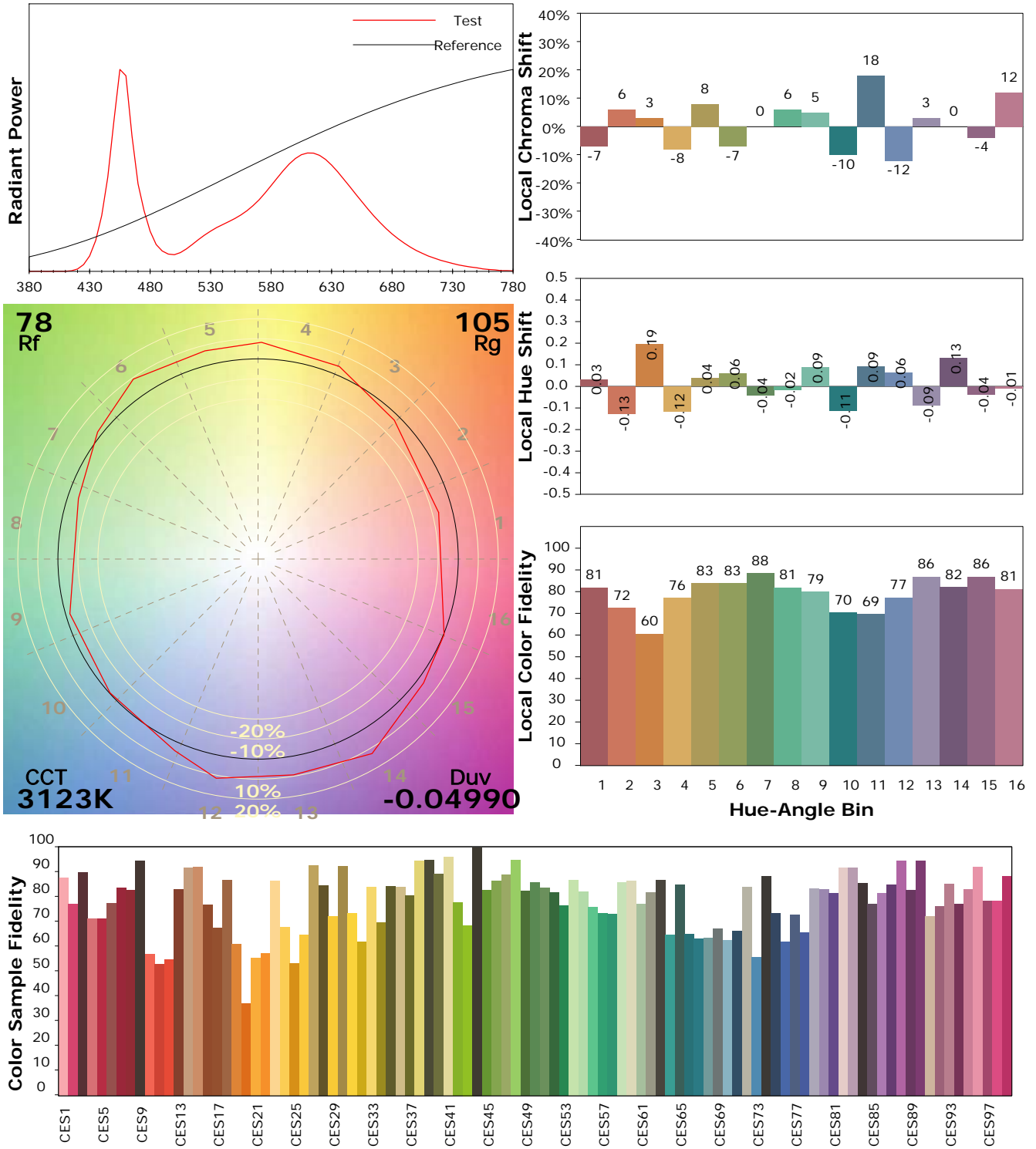
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## IES TM-30-18 Color Rendition Report

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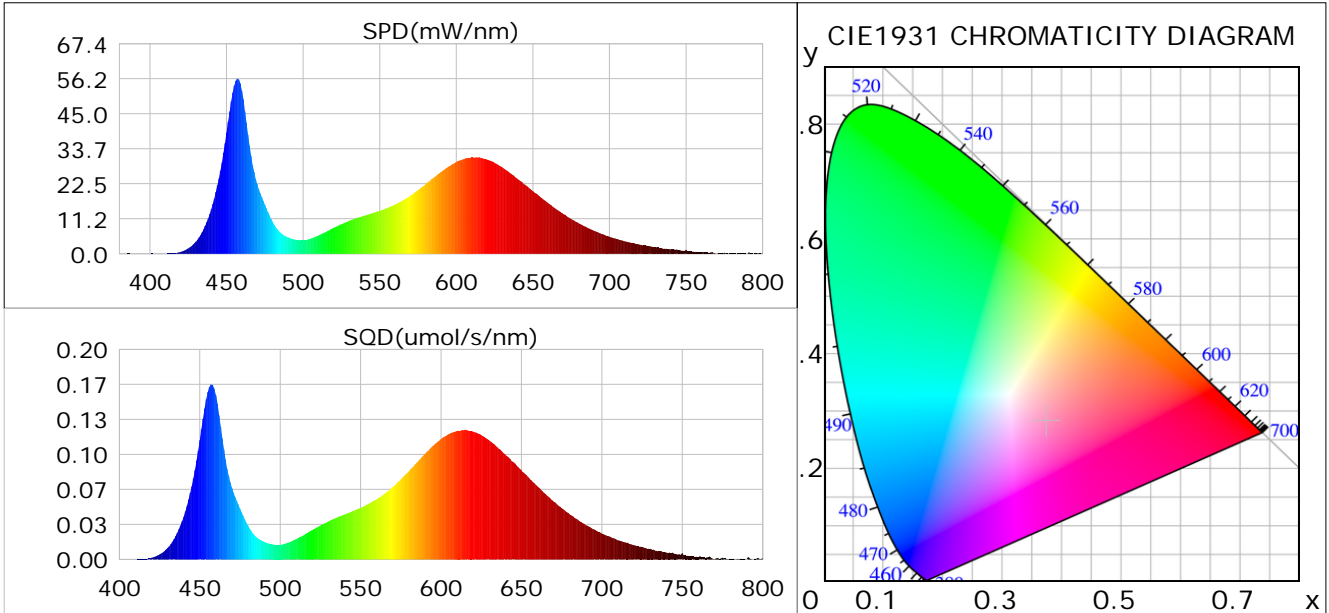
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## Plant optical param data

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 Dominant Wavelength: 0.0nm Color Purity: 0.000  
 CRI:  $R_a=76.3$



### Plant Optical Param

$ \mu_v(lm)$ : 1283.46	$Q_v(lm.s)$ : 1283.46
$ \mu_e, \dot{E}(W/nm)$ : 5.12	$Q_e(J)$ : 5.12
$ \mu_e(W)$ : 4.97	$ \mu_{fr}(W)$ : 0.15
$ \zeta_e$ : 0.33	$ \zeta_{fr}$ : 0.01
PPE(umol/s/w): 1.56	Kfr: 0.06
Erb_Ratio: 1.30	PPF(umol/s): 23.34
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 5.76
PPF(500-600)(umol/s): 7.15	PPF(600-700)(umol/s): 10.43
PPfr(700-800)(umol/s): 0.89	PPF.t(umol): 23.34
$ \mu_{ch-A.t}(J)$ : 0.47	$ \mu_{ch-A}(W)$ : 0.47
$ \mu_{ch-B.t}(J)$ : 0.32	$ \mu_{ch-B}(W)$ : 0.32
$ \mu_b.t(J)$ : 1.50	$ \mu_b(W)$ : 1.50
$ \mu_y.t(J)$ : 1.52	$ \mu_y(W)$ : 1.52
$ \mu_r.t(J)$ : 1.99	$ \mu_r(W)$ : 1.99

### Electric Parameters

Voltage: 230.80V	Current: 0.0690A	Power: 14.96W
Power Factor: 0.9360	Frequency: 49.99Hz	

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